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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,429	07/13/2004	Benno Tieke	NL 030043	9891

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EXAMINER

JACKSON, DERICK G

ART UNIT	PAPER NUMBER
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2627

MAIL DATE	DELIVERY MODE
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12/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Office Action Summary</i>	Application No.	Applicant(s)
	10/501,429	TIEKE ET AL.
Examiner	Art Unit	
	Derick G. Jackson	2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 13 July 2004.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-9, 19 and 20 is/are rejected.

7) Claim(s) 10-18 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 07/13/2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application

6) Other: ____ .

DETAILED ACTION

Specification

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Claim Objections

1. **Claims 10-18** are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. **Claim 7** recites the limitation "a second transparent auxiliary layer" in lines 10-11, page 19. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 depends from claim 1 or 2, however, neither claims 1 or 2 disclose a first transparent auxiliary layer.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-3 and 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. (hereinafter "Rosen"), U.S. Patent No. 5,627,817 in view of Lin et al. (hereinafter "Lin"), U.S. Patent Application Pub. No. 2003/0185143 A1.

Regarding **claim 1**, Rosen discloses a dual-stack optical data storage medium (Fig. 2C) for write-once recording (col. 3, line 62) using a focused radiation beam having a wavelength λ (col. 4, line 21-24) and entering through an entrance face (Fig. 3, element 50, col. 3, lines 49-51) of the medium during recording, comprising:

at least one substrate present on a side thereof (Fig. 2C, element 156):

a first recording layer (Fig. 2C, element 490, corresponding to L_0), comprising a write-once type recording layer having an index refraction $n = 2.7$ and an extinction coefficient $k = 0.05$ (col. 7, lines 57) which can be written in complex form

$n_{L_0} = n_{L_0} - i \cdot k_{L_0}$ and having a thickness between 15-125 nm (corresponding to d_{L_0} , col. 7, line 46) said first recording layer having an optical reflectivity (corresponding to the reflection value) over 10% and an optical transmissivity (corresponding to the transmission value) greater than 50% (col. 8, lines 1-10).

a second recording layer (Fig. 2C, element 492, corresponding to L_1) comprising a write-once type recording layer made of the same materials as in said first recording layer and therefore having the same complex refraction index of said first recording layer. Furthermore, said second recording layer does not have to be highly transmissive but highly reflective with sufficient absorptivity for recording which may be adjusted by varying the recording layer thickness (col. 8, lines 1-22).

all parameters defined at the wavelength λ (col. 7, line 57),
said first recording stack being present at a position closer to the entrance face than the second recording stack, a transparent spacer layer (Fig. 2C, element 422) sandwiched between the recording stacks, said transparent spacer layer having a thickness substantially larger than the depth of focus of the focused radiation beam (col. 5, lines 1-4 and lines 15-20), characterized in that the transmissivity of said first recording layer is greater than 50% (col. 8, line 2) and extinction coefficient for said first recording layer and said second recording layer is within the range 0.1-1.0 (col. 6, line 29).

Rosen fails to teach said second recording layer has an optical reflectivity satisfying $40\% \leq R_{L1} \leq 80\%$ but suggests said second recording layer be highly reflective with sufficient absorptivity for recording (col. 8, lines 1-22).

In the same field of endeavor, *Lin* discloses a dual-stack optical storage medium wherein the reflectivity of the second recording layer is within the range $36\% \leq R \leq 0.75\%$ when the reflectivity of the first recording layer is greater than 15% (Fig. 9).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made, to produce the dual-layer optical recording medium of *Rosen* to meet the optical characteristics as taught by *Lin*, motivation being to ensure the reflected light intensity of the laser beam projected on the first information recording layer and the second information recording layer is acceptable to the standard CD-RW or re-writable DVD optical disk drives (paragraph [0029]).

Regarding **claim 2**, *Rosen* further teaches $\lambda = 0.650$ (see col. 10, lines 5-7).

Regarding **claim 3**, *Rosen* further teaches the index of refraction $n > 1.6$ (col. 6, line 27) and said first recording layer thickness is between 15-125 nm (col. 8, lines 1-10).

Regarding **claim 19**, *Rosen* further discloses a guided groove for said second information recording layer is provided in the transparent spacer layer (col. 5, lines 22-24) for laser tracking or header information.

Regarding **claim 20**, *Rosen* further discloses a guided groove for said second information recording layer is provided in the substrate (col. 3, lines 62-65) for laser tracking or header information.

6. **Claims 4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Rosen* and *Lin* as applied to claim 1 above, and further in view of *Kitaura* et al. (hereinafter “*Kitaura*”), U.S. Patent Application Pub. No. 2001/0005350 A1.

Regarding **claim 4**, claim limitations according to claim 1 and claim 2 are met by the combination of *Rosen* and *Lin*. *Rosen* also teaches a write-once recording layer

having a thickness between 15-25 nm, see rejection to claim 3 above. However, *Rosen* and *Lin* in combination or alone fail to disclose a first metal reflective layer, having a thickness less than or equal to 25 nm, present between the write-once first recording layer and the transparent spacer layer.

In the same field of endeavor, *Kitaura* teaches a reflective layer (Fig. 1, element 9, paragraph [0041]) disposed between a first information recording layer (Fig. 1, element 7) and a separating (spacer) layer (Fig. 1, element 3). Furthermore, *Kitaura* provides as an example, a reflective layer having a thickness of about 10 nm (paragraph [0065]).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the optical recording medium as taught by the combination of *Rosen* and *Lin* to include an optional reflective layer as disclosed by *Kitaura*. The motivation would be to efficiently use the incident laser light and to improve the cooling ability of the adjacent recording layer to facilitate a change from a crystalline state to an amorphous state (paragraph [0041]).

Regarding **claim 5**, *Kitaura* further discloses a transmittance improving layer (Fig. 1, element 10) disposed between said reflective layer (Fig. 1, element 9) and said separating layer (Fig. 1, element 3), having a refractive index of 1.5 or more (paragraph [0042]) and having a thickness of 40 nm (paragraph [0070]).

Regarding **claim 6**, see similar rejection to claim 5.

7. **Claims 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Rosen and Lin* as applied to claim 1 above, and further in view of *Yasuda et al.* (hereinafter “*Yasuda*”), U.S. Patent No. 6,511,788 B1.

Regarding **claim 7**, claim limitations according to claim 1 and claim 2 are met by the combination of *Rosen* and *Lin*. *Rosen* also teaches a write-once recording layer having a thickness between 15-25 nm, see rejection to claim 3 above. However, *Rosen* and *Lin* in combination or alone fail to disclose a second transparent auxiliary layer, having a refractive index n_{12} and having a thickness d_{12} satisfying the expression

$$0 < d_{12} \leq \frac{3\lambda}{8n_{12}}, \text{ is present at a side of the write-once first recording layer.}$$

In the same field of endeavor, *Yasuda* teaches an enhancement film (transparent auxiliary layer) present at a side of a phase-change recording layer (Fig. 25, element 24B), having a refractive index of 2.13 and having a film thickness of 50 nm (col. 30, lines 58-66).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the optical recording medium as taught by the combination of *Rosen* and *Lin* to include an optional enhancement film as disclosed by *Kitaura*. The motivation would be to increase the reflectance difference between a crystallized area and the amorphous area of the phase-change recording layer (col. 24, lines 27-45).

Regarding **claim 8**, Yasuda further discloses said enhancement film is located at a side of a phase-change recording layer most remote from the entrance face (Fig. 25, element 24B) and having a refractive index of 2.13 (col. 24, lines 27-45).

Regarding **claim 9**, Yasuda further discloses an enhancement film located at a side of a phase-change recording layer closest to the entrance face (Fig. 25, element 24B) and having a refractive index of 2.13 (col. 24, lines 27-45).

Conclusion

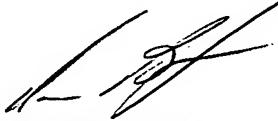
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derick G. Jackson whose telephone number is (571) 270-3314. The examiner can normally be reached on Monday through Friday, 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost can be reached on (571) 272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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AU 2627

/DGJ/



DWAYNE BOST
SUPERVISORY PATENT EXAMINER